

An Analysis of the Role of "Insider Trading" on Futures Markets*

I. Introduction

Section 23(b) of the Commodity Exchange Act requires the Commodity Futures Trading Commission (CFTC) to examine the possession by futures traders of material nonpublic information concerning other persons' cash market or futures activities and to report to Congress on the adequacy of the commission's authority to prevent abuses resulting from those circumstances. This request for a study of "insider trading" represented a compromise between groups that wanted to outlaw insider trading and those who felt that current regulations in the area were adequate. Unfortunately, section 23(b) does not define "material nonpublic information," or state what "abuses" are associated with its possession, or require the CFTC to produce a cost-benefit analysis of the effects of increasing the CFTC's authority. This paper provides a framework in which to analyze the role of insider trading in futures markets. Within this framework it will be possible to provide meaningful content to the terms mentioned in section 23(b) and to consider what evidence could be collected regarding correctable abuses associated with insider trading.

An analysis of the effects of trading by individuals with private information is presented. Such trade generally adds to the liquidity and the efficiency of futures markets. However, some types of "insider" trading decrease the liquidity and the viability of futures markets. It is extremely difficult to isolate liquidity-enhancing trades from those that decrease liquidity. However, it is in the exchanges' interest to do so, and most futures exchanges have rules against some forms of insider trading. The analysis suggests that a careful cost-benefit analysis precede any government-imposed restrictions on insider trading in futures markets.

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In order to prevent confusion, the possessor of nonpublic information will be called an "informed trader." It is useful to distinguish an insider from an informed trader. In securities law, which regulates insider trading, an insider is a corporate employee or some other person with a fiduciary responsibility to the shareholders of the corporation. The mere possession of valuable private information by a person who owes no fiduciary responsibility to the shareholders of a company does not make the person an insider under securities law.¹ Thus, for example, an officer of corporation A who acquires information about corporation B and makes a profit by trading shares of B is not in violation of the insider trading provision. Similarly, a person who overhears a discussion between corporate insiders and then trades based on the information does not violate insider trading regulations when he has no relationship to the company.

Unlike a security of a corporation, a futures contract does not represent the equity interest of shareholders. A futures contract is an instrument of an exchange. It is useful to think of an exchange as selling transactions services. The exchange provides the means by which those people who want to buy a particular commodity, or security, for future delivery can trade with someone who desires to sell the same. The transactions services provided by the exchange include contract standardization, trading floors, clearing services, setting standards for traders, and so on. The futures contract is one of the means used by the exchange to effect the provision of these transactions services, but it does not represent an equity interest in a corporation as does a security such as a common stock. Insiders of a futures exchange, such as exchange officers, economists, and so on, could be construed as analogous insiders to corporate officers. However, it is convenient to separate our discussion of exchange insiders from the discussion of informed traders who are not officers or employees of an exchange.

It is generally recognized that futures markets can be used by traders to hedge risks associated with the price fluctuations in the underlying spot market. It is also recognized that futures markets serve a price discovery function. That is, traders buying and selling futures contracts on an exchange discover competitive prices that represent an aggregation and a consensus of what traders think about the future value of the underlying spot commodity or security. Exchange-generated futures prices convey information that helps establish cash prices for commodities in related markets. In Sections II and III, these two roles will be analyzed. It will be shown that the hedging role and the price discovery role are intimately connected. One cannot exist without the other. It is unlikely that a futures market can be viable if both roles cannot coexist.

1. For an analysis of insider trading regulations on securities markets, see Carlton and Fischel (1983).

Section IV discusses the implications of the price discovery role for the profits to be earned by traders who are relatively more informed. The effect of regulating the trading activities of informed traders on the viability of futures markets is analyzed. In particular, an analysis is provided as to the extent to which the hedging and price discovery functions will be impaired by restrictions on informed trading.

Section V contains a summary of the analysis. The likely outcome of an investigation of future trader's profits is presented along with conclusions as to the regulatory implications of these findings.

II. Viable Hedging in Futures Markets

The most elementary aspect of a futures market is its function as a market where people can insure against the price fluctuations of some underlying commodity or security. Typical users of the insurance function include a grain merchant with stocks of grain that must be stored (a short hedger) and a firm that uses grain to produce a final product but must make investments in machinery or guarantee the price of the final product before it can learn the price of grain (a long hedger). More modern examples include a savings and loan association using mortgage or bond futures markets to hedge against interest rate fluctuations. It is easy to think of risks that must be faced by any producer in any industry. Yet there do not exist futures markets for every commodity. That is, some futures markets do not appear to be viable. Conversely, trading on a futures market is only one method by which insurance can be obtained. Producers can make forward contracts with commodity brokers or attempt to get insurance via indirect capital market transactions. We are thus led to ask, What is unique about futures markets, and what makes a futures market viable?

To answer these questions, it is necessary to explore the nature of futures market in greater depth. Consider again the example of the grain merchant who is currently storing 10,000 bushels of grain. A 20% fall in the price of grain could drive the firm into insolvency. If the firm sells 10,000 bushels of grain forward on a futures market at a price of \$40, then the firm bears no risk associated with the spot price fluctuation of the hedged stock. The price at which the grain can be sold forward is of crucial importance to the grain merchant. For an organized market to be viable the price must be attractive to the hedger and to the trader who takes the other side of the position. Further, there must be enough such mutually beneficial trades to keep the organized market liquid. There are three general factors that enter into the determination of the price of futures: (a) the information possessed by market participants about the future spot price; (b) the number of traders available (and the size of the position on which they can afford the margin); and (c) the willingness of these traders to bear risk associated with spot price fluctuations. I will now analyze each factor in turn.

A. Information and the Cost of Hedging

The simplest interaction between the information possessed by market traders and the hedging role of futures markets can be seen by noting that, if the futures traders have information that leads them to believe that the spot price is very likely to be high, then they will be willing to buy the grain forward at a higher price than if they had good information that the future spot price will be low. Of course, every seller would like traders to possess information that indicates that the future spot price is high, and, conversely, every buyer (e.g., a long hedger) would like the traders to have information that the future spot price will be low. That is, each participant in the market wants the other participants to have information that will impact positively on his trading position. Each trader would be best off if other traders only collected information that impacted positively on his own position.

Traders are not only concerned with the information possessed by other traders but are also, of course, often in possession of private information themselves. Every commercial trader knows something about his own demands or supplies of the spot commodity. He will also often have information about the demands and supplies of his customers. Even noncommercial traders will have access to information or the facilities to process information that is not possessed by other traders. A noncommercial trader may know things about associated spot markets or may have special talents for evaluating public information sources.

In the next section I will argue that it is the diversity of information mentioned above (and thus the existence of many traders trying to earn a return from the little piece of special information that they have acquired) that increases the number of people willing to bear the risk associated with other peoples' spot positions and also helps to maintain a liquid market. However, the existence of information diversity has a very complicated effect on the price paid by hedgers exactly because the diversity of information makes it likely that some information will have negative consequences and others will have positive consequences for a given hedger.

Any factor that changes the incentives for traders to acquire information or to trade on the basis of acquired information will therefore affect the futures price and the ability of a hedger to use futures markets as a source of insurance. I will show below that there is an intimate connection between the quality of information that traders acquire, the number of traders who acquire the information, and the willingness of traders to bear risk.

B. Market Liquidity

The second factor that determines the cost of hedging is commonly known as the liquidity of the market. A liquid market is used here to

mean that there are enough traders so that the hedger can sell his grain forward at a competitively determined price. There are two aspects to "enough." First, there should be enough traders to rule out any sort of collusive behavior. Second, there should be enough traders with access to information about the determinants of the future spot price. If there are many traders but only a few in possession of good information about the future spot price, then this can deprive the hedger of a trade at a price that fully reflects their information.

The liquidity of a market is intimately related to the ability of traders to trade on the basis of private information. If everyone always has the same information, then the futures price will be very responsive to (public) news, but there will be very little trading volume. For example, if everyone learns that there is to be export controls on a grain at the same time, then this will cause the futures price of grain to fall at the time of announcement, but there need be very little trade on the announcement. In order for there to be trade, at the time of the announcement the announcement must lead people to desire to revise their holdings in different directions, with some people becoming sellers and other people becoming buyers. If everyone agrees that the futures price should be lower because of the announcement, then everyone will want to sell at the old price. With everyone wanting to be a seller there will be no trade, and the price will fall either until everyone is happy with their preannouncement holding or until someone wants to be a buyer.

The scenario above should be compared to what would occur if traders are in possession of private information prior to the public announcement. Prior to the public announcement some traders may learn that there will be export controls that will be very severe, say, associated with a future spot price of \$10. Other traders may get no information about the possibility of export controls and will expect an "average" spot price of, say, \$50, which reflects the possibility that any administration might impose export controls but contains no special information about the imposition of controls by the current administration. Other traders may get information suggestive of a mild form of export controls and expect a spot price of \$80. Prior to the announcement, there will be some futures price established that reflects these differences of opinion, say, \$40. At this price those traders who expect a low spot price have large short positions, and those traders who expect a high spot price have large long positions. Now consider what happens when the announcement actually occurs, say, that there will be stringent export controls. At the old price of \$40 everyone will want to sell, so the futures price will fall. The price will fall until those traders in the middle group (who had no special information) and those traders who had a large short position because they thought that there would be stringent controls are willing to buy more (long) future contracts from those traders who thought that stringent export controls

were unlikely and hence had a very large long position at the old price of \$40. Thus a public announcement will lead to trading volume when there exists private information about the subject of the announcement.

These examples are designed to show that differential information is a key source of daily trading volume in a futures market.² The liquidity of a market is determined by the number of people who are willing to spend the time and money to monitor the price movements in the market. If traders are participating in a market because they have private information and are trying to earn a return on that private information, then this will increase the liquidity of the market. That is, all hedgers want to be able to acquire positions in a liquid market. If the market is liquid because of the presence of traders with private information, then this, in and of itself, helps hedgers. Of course, an uninformed hedger may not take as good a trading position as an informed hedger may take, and, to some extent, the existence of informed traders may lead the uninformed trader to lose money to the informed trader. However, I will argue in the next section that the benefits of hedging in a liquid market at least balance the costs associated with income transfers between informed and uninformed traders. Fundamentally, it takes differences in opinion and information to make a futures market viable, and the loss that sometimes occurs when a hedger is less informed than another hedger is the price paid for the liquidity of the market.

C. *Risk Premia*

The third factor that determines the cost of hedging is the size of the risk premium necessary to induce traders to bear risk. Though this factor may seem obvious, it is subtly related to the other two. When traders buy the hedger's grain forward, they bear the risk that their forecast of the future spot price is inaccurate and thus that they will have paid more than the actual spot price. Traders will charge hedgers for this risk bearing and will thus lead short hedgers to receive a somewhat lower price than they would if the risk were not present. (Of course, if there are enough long hedgers available, this effect will not occur. Further, if there is a dominance of long hedgers, then the effect is reversed; long hedgers will pay more for the right to buy the grain forward than they would in the absence of risk regarding the future spot price.) It is crucial to realize that the quality of the traders' information about the determinants of the future spot price determines how much risk they bear in buying (or selling) the grain forward. If the traders have perfect information about the future spot price, then they

2. For an analysis of the role of differential information in generating trading volume, see Grossman (1977).

bear no risk from a position on the futures market that is held to maturity. In the next section I shall analyze the role of a futures market as an aggregator of information. That is, the private information of traders is, to some extent, aggregated by futures prices. This aggregation, in effect, allows the futures price to transmit information to traders that is better than each trader's private information. Traders in possession of this aggregated information charge a lower risk premium for bearing the hedger's risk since their improved information leaves them facing less risk.

There is another risk that a trader can face. This is the risk that he may have to liquidate the contract before maturity or that some new information may arrive before the maturity of the contract that could adversely affect the value of his position. Such risks are reduced in a liquid market relative to an illiquid market. A trader who knows that there are enough other traders to buy his position out if he must sell will be more willing to take that position in the first place. Therefore, to the extent that the possession of private information helps to produce a liquid market, it will also tend to reduce the risks associated with illiquidity and thus reduce the risk premia that hedgers must pay in using the futures market for insurance.

III. Information Aggregation in Futures Markets

In the previous section I showed how the cost of using futures markets for hedging purposes is intimately connected to the quality and variety of the information possessed by traders. In this section I present a somewhat more detailed analysis of the "price discovery" or the "information aggregation" role of futures markets. It is useful to begin by reviewing how prices work in a free market economy to allocate resources.

The "law of supply and demand" implies that if an increase in demand occurs for a certain product, then its price will rise and that will lead to an increase in production of that product. Further, a producer need have little information about the source of the increase in demand if he knows the extent to which prices today and in the future will rise because of the increase in demand; he need only know what the benefit will be of increasing production. The price to be received summarizes all the producer need know about the reasons for the increase in demand. For example, there may be many factors that lead to an increase in the demand for U.S. wheat: there can be poor harvests elsewhere, an increase in food demand because of improved economic conditions, changes in import-export regulations here and abroad, and so on. A wheat producer who knows what wheat prices will be now and in the future need know nothing about the underlying factors that have determined those prices in order to know how to adjust his wheat produc-

tion. As long as he knows his costs, the prices tell him the profitability of different levels of production. Thus a free market system works by the decentralization of information acquisition. Each producer need only know his own costs, and prices will transmit the relevant summary information about the benefits others will receive from his production. When the benefits rise, then prices will rise and call forth more production to the extent that the costs of the additional production are less than the benefits.

Though it has been understood since Adam Smith's time that changes in the underlying conditions of demand and supply will change the incentives people have to consume and produce by changing prices, it was not understood until recently how the information about such changes becomes usefully incorporated in prices. In a large economy, information exists in a diffused form throughout the population. Each producer knows about the demands of his own customers and of the determinants of his cost of production. He may know very little about production and demand conditions in other firms, industries, and countries. In our economy the demand for any product has many random components. Some suppliers may observe an increase in demand while others observe a decrease. Some suppliers may have information that the decrease in demand is temporary while others will have no such information. It is this heterogeneity and asymmetry of information that is communicated through changes in prices caused by changes in the aggregate demand for goods and services.

By far, the most important source of heterogeneity of information is with regard to the future. This information is important because much production, distribution, and consumption takes time. Decisions and commitments must be made today in reliance on the prices that will be realized in the future. Firms must store grain, plant grain, commit to the delivery of products that use grain as an input, make loans that have values dependent on future interest rates, make export commitments denominated in foreign currencies, and so on. Information about the determinants of future spot prices is dispersed throughout the economy. Each user of the spot commodity knows something about his own future needs for the commodity. Importers and exporters know something about demands and supplies and the possibility of trade restrictions. Storage firms know something about the rate at which current supplies are being run down.

The fact that information is dispersed is only part of the reason for the need to aggregate information. Another important characteristic of information is that it must be processed and collected. Not only are there many public reports to analyze (e.g., those relating to general economic conditions, weather forecasts, crop conditions, and so on) but there are also valuable private sources of information. Private sources include interviewing producers and users of the spot commod-

ity to determine their future demands and supplies, on-site visits to inspect crops, stored stocks of the spot commodity, and so on. The processing and collection of information is costly.

Futures markets are particularly suited to providing incentives for individuals and firms to engage in the costly activity of collecting and processing information. People who think that they have the correct interpretation (i.e., method of processing information) can "put their money where their mouth is" by taking a position on the futures market. For example, a person who thinks that economic indicators are being misinterpreted by others and thus that interest rates will rise by more than others expect can take a position in interest rate futures so that he will make a profit if indeed interest rates rise by more than is generally expected.

It is important to realize that without the incentives provided by a futures market much private information would never be collected and the costly private processing of public information would be greatly reduced. This is because it is very difficult for a person to sell directly the results of interpretive information collection and processing. A person can sell the results of his information-generating activities in the form of a market newsletter or by becoming a manager of other peoples' funds and sharing in the profit of the portfolio that he manages. These activities are sometimes successful, but it is no easy task for a person to convince others that he can "beat" the market, and this limits the extent to which informed traders can earn money by trading for large groups of other traders. It is additionally difficult to sell information directly through a newsletter because of the impossibility of maintaining secrecy between paying subscribers of the newsletter and nonpaying free riders. More important, however, is the fact that the sale of information can be profitable only if the purchasers of the information can be assured that all other traders do not have the same information. No one will pay for trading information that everyone else already possesses. This is because trading profit can only be made by purchasing or selling at prices that are too low or too high, respectively, given the information. Prices will be too low, given the information, if the average market participant values the contract less than the informed purchaser (e.g., this will be the case when the average participant does not have access to the information source of the informed trader and when the informed trader has received news that prices will be higher than previously expected). Hence, if information collection can be rewarded through the direct sale of information, it must be the case that the purchasers will then be in exclusive possession of private information.

I have thus far argued that futures markets provide a place where individuals who, being permitted to trade on the basis of private information, can earn a profit by so doing and hence have an incentive to

collect such information. (A good example of this is an economist employed by a bond dealer-broker who makes interest rate forecasts. The employer takes positions in the market prior to the economist's public announcement of his forecast. In this way the employer earns a return on its information-generating asset. Note that it might be very difficult to sell the information directly, and the ability to trade on the market prior to the information release is a mechanism whereby incentives to collect information are maintained and, more importantly, whereby the incentives publicly to release the information are maintained.) The next step in the argument is to realize that the price of the traded contract will aggregate and thus to some extent reveal information to uninformed market participants. It is through the trading of individuals based on private information that futures markets can have a price discovery role for traders who do not possess that information.

The information aggregation effect works through the fact that traders to some extent affect prices by their trades. This occurs because a trader's decision about whether to (and how much to) buy or sell futures is based on his information. Anything that affects the net demand for futures will affect the market price. This will cause the market price to be based on the information of traders. Traders with superior information will be on the right side of the market more frequently and will thus make more money on average, but this means that the market clearing price will convey some of their information.

It has been shown that not only will markets convey information from relatively informed traders to relatively uninformed traders but also that, more importantly, all traders can be given strictly more information by market prices than they can individually obtain through private sources. That is, prices can aggregate the differing information of traders into a signal that is better than the information of any single trader (see Grossman 1976, 1981). This phenomenon is particularly important in situations where information about current or future conditions is widely dispersed in the economy. To understand this phenomenon, consider the wheat futures market. The price of wheat in, say, December is determined by many factors: quality and size of the harvest, export demand, domestic demand, price of substitute grains, and so on. At a given moment a person heavily involved in one aspect of the wheat market knows a lot about his own conditions of demand and supply but may know very little about conditions elsewhere. He thus may do reasonably well at predicting his own circumstances but not very well at predicting how these circumstances will affect the price of wheat in December. For example, a wheat exporter may have accurate information about export demand but poor information about domestic demand or supply. In order to get a very good prediction about the December wheat price it is necessary to take all the expert opinion about the price change from each sector of the wheat industry

and aggregate it into an index of the price change for the economy as a whole. This aggregation is exactly what will occur when there is trading on the wheat futures market.

To understand how the futures market will aggregate information consider what happens in its absence. An expert in a particular sector would use the knowledge he has about the supply or demand conditions in his sector along with general experience about the relationship between conditions in his sector and the December wheat price. For example, suppose that the exporter feels that export demand will rise by 3% and that he knows from general experience that when this occurs the December wheat price will rise by, say, 4%. Thus in the absence of a futures market he would forecast a 4% rise in the December wheat price. Consider another sector (e.g., domestic wheat users) whose experts think that their demand will rise by, say, 12%. General experience tells them that the December wheat price can be expected to rise by, say, 11% in such a case. The expert in each industry does not have the current information of the expert in the other industry; hence, they have very different expectations about the December wheat price. Now consider the effect of introducing futures trading. The experts in each industry know that the experts in other industries are watching the futures prices and will be trading if the price differs from their beliefs about the December wheat price. If the experts in the first industry saw a rise of, say, 10% in the December futures price, then they would know that other sectors must be experiencing a demand increase more unusual than the 3% they expect to experience. This will lead them to revise their beliefs about the December wheat price. Thus the futures price must convey to each sector something about the demand conditions expected by the average of all other sectors. Trading will proceed until the average that each expert expects conditional on his own information and conditional on the information contained in the futures price (about the information possessed by the other experts) is the same. It can be proved that this average will be the best predictor of the December wheat price that is obtainable from *all* the traders' information.³ That is, the futures price will convey the aggregate of all the traders' information about their own customers' wheat demand and supply conditions at each point in time.⁴

3. See Grossman 1976. The proof provided therein for stock markets can be applied directly to futures markets.

4. This theory has been tested on data from Israel. Huberman and Schwert (1985) have considered the market for indexed bonds in Israel. The existence of an indexed bond market allows the aggregation of information about inflation in much the same manner as a futures market. Thus, their results on the degree of information aggregation can be expected to apply to a futures market. In particular, if prices perfectly aggregate the information possessed by experts in their own industries, then, when the inflation rate is announced, the price of an indexed bond should not change. This is because the inflation rate announcement contains information about inflation over the previous month, and by hypothesis trading during the previous month has led the indexed bond

The term "experts" used above simply refers to anyone in an industry who deals with people who have demands or supplies that affect the December wheat price. In the case of grain futures, note that different storage firms will have different supplies of grain at a given point in time. They will thus have different information about the rate at which the previous harvest is being exhausted. Users of the grain (or, e.g., chocolate companies in the case of cocoa beans) will have different information regarding the likely aggregate demand for the spot commodity in the future. Bond dealers have information about how much *their own* customers are willing to pay for bonds. All this information will be aggregated by futures trading into a price that transmits to each trader other traders' information and thus augments his own information. It is important to note that this information is also transmitted to people who do not trade on futures markets. A firm with no particular hedging need will look to futures prices for information about the future behavior of the spot price of the underlying commodity.

IV. Consequences of Limiting Insider Trading

A futures market is thus seen to serve as a place where private information is aggregated and transmitted. The possessors of private information earn some trading profit from their information and, in so doing, transmit that information to others. This analysis shows that it should come as no surprise if a study of trading profit finds that traders representing large firms involved in the spot commodity (i.e., commercial traders) make large trading profits on futures markets. Commercial traders are the people most likely to be aware of changes in the demand and supply of the underlying spot commodity. Their trading activities not only yield them profit but also affect prices and make the futures price reveal some of their information to other traders. Thus, their trading activities enhance the price discovery role of the futures market. Any regulation designed to reduce the trading activity of these traders will reduce the informativeness of futures prices.

There will be a related consequence of reducing the trading activity of traders with private information: the liquidity of the futures market can be reduced. Once it is understood that futures markets serve as a place where traders can earn money from the collection and processing of information, then it is realized that the very presence of these traders can help create a liquid market for hedgers and for investors who

price to perfectly aggregate the information about inflation in each industry during that period. Thus the movement in indexed bond prices on the day the inflation rate is announced is a measure of the extent to which the market prices over the previous days did not perfectly aggregate information. They found that there was only a small effect on the bond prices on the announcement date, which strongly supports the theory that futures prices aggregate information.

are insuring hedgers. In particular, there will be many traders on the trading floor (or in close contact with the trading floor) who are participants in the market to take advantage of their private information, but, by so doing, they are able to prevent temporary price movements caused when a hedger or investor has to liquidate a position. This increases market liquidity. I noted in Section II that a lack of liquidity will increase the size of the risk premium required to induce participation in the futures market and hence will lead to an increase in the effective cost of hedging.

As I noted in Section II, the presence of informed traders can have very complicated effects on the liquidity of the market. As noted above, to the extent that uninformed traders are not driven from the market, the liquidity of the market increases because of the presence of informed traders. However, there is another effect: an uninformed trader may feel that he is at a disadvantage because he is trading against an informed trader and hence may decide not to trade and thus not to participate in the market. For example, if an uninformed trader knows that he can buy at a particular price only because informed traders know that the contract is worth less than that price, then he will not buy. This argument cannot be completely correct. Its logical extension is that a person should never purchase any product that is still on a store's shelf since it remains on the shelf only because informed buyers decided that it was overpriced. (This is similar to the joke, "I would never want to be a member of a club that would accept me as a member.")

Uninformed traders cannot be driven out of a market by the existence of informed traders because there would then be no one for the informed traders to be trading with, so their profit from trade would decrease and they would leave the market. Instead, a degree of informed trader participation will be reached when informed traders make a profit that covers their costs of participation in the market and information collection.⁵ The uninformed trader receives the hedging benefit of the futures market, but the uninformed trader is at a partial disadvantage to the informed trader and, on average, may lose money from his trades. The benefit derived from the hedging offsets the possible expected monetary loss from participating as an uninformed trader.

It is essential to recognize that, though futures markets are a zero-sum game in terms of dollars, some participants can be made better off by participating, even though they lose money on average. It is no different than an insurance policy. A person who takes out an automobile insurance policy at a cost of, say, \$500 a year can be very

5. Grossman and Stiglitz (1980) give a precise analysis of how the level of market participation and the informativeness of prices are determined by the costs of participation and information collection.

confident that the insurer has priced the policy so that the expected payout on the policy is less than \$500. This is because the insurance company must cover its costs of operation as well as the payout on the policy. Thus an insurance "investment" is one that yields an expected loss to the insured party. Yet insurance can be a very sensible investment because it reduces the risk that the insured faces. Similarly, an uninformed trader on the futures market can benefit from participation even if he loses money on average.

I do not wish to suggest that the liquidity and hedging effectiveness of a futures market can never be increased by eliminating some special types of informed trading. In particular, there will sometimes be information that a person acquires that permits him to trade a very short time before a public announcement of the same information. This trading is purely redistributive. The person who is lucky enough to get the information a moment before others will make money off the unlucky traders. If on the morning of a particular day a given trader does not know whether he will be the lucky one to get the news first, then the fact that there will be trade based on someone receiving the news a moment before the others will increase the risk of everyone from participation in the market. It may well be that the existence of this type of trading raises the risk of participating in the market to many traders since each trader worries that when he makes a trade it will be with someone who has the type of private information mentioned above. This could lead to a decrease in participation in the market relative to what would be the case if such trading could be prohibited. However, it is not obvious that overall participation falls because of purely redistributive trade. The informed traders as a group may be profiting from uninformed traders. These profits finance the informed traders' participation on the market and hence can increase the liquidity of the market. That is, if each informed trader justifies his daily participation in the futures market on the grounds that he can be lucky, then the possibility of informed trading will raise the number of people who are following the market on a daily basis. These people will prevent temporary price movements from occurring when uninformed participants temporarily increase or decrease their positions, that is, they increase the liquidity of the market. The increase in liquidity can lower the risk of trading in the market and hence can tend to increase participation.

Though purely redistributive trading activity may lead prices to reflect information slightly sooner than the public announcement, the earlier revelation of information may have very little social value relative to the costs associated with the decrease in participation in the market. However, note that a trader may possess information of the type above because he is devoting resources to the collection and processing of information. It may well be that most of the time his information, or conclusions, are new, but some of the time he just

learns of a public announcement shortly before it occurs. If the trader is prevented from trading on his prior knowledge of the public announcement, then he may be forced out of the activity of information acquisition and processing because of insufficient profit.⁶

The attempt to prohibit trading based on prior knowledge of a public announcement can be like trying to discourage excess profit in any industry by the use of a "windfalls profit tax." A firm may invest in a resource, or activity, and most of the time make very little money from these investments. It may make the investments because there are a few times when it will make a large amount. If the situations in which the investor makes a large amount are declared "windfalls" and if he is prevented from keeping the windfalls, then he will reduce his investments in that activity. In the area of information collection and processing, socially useful information may be produced jointly with information that is of little social value; the trading profit from the latter type of information is effectively subsidizing the production of the former type.

The argument above shows that it is difficult to prevent "bad" informed trading without also preventing "good" informed trading. However, it is not impossible to do so. In particular, almost all futures exchanges have decided to prohibit some types of insider trading. For example, exchanges prohibit various members of their staffs from engaging in trades. Staff members who are privy to the trading positions of traders as part of their enforcement of exchange regulations are prohibited from trading. If these staff members were permitted to trade, then they would benefit from the information collected and processed by other traders without having to bear any of the costs of these activities. Presumably, such trades by exchange insiders would decrease the liquidity of the market both by discouraging the trading activity of informed traders who collect costly information and by increasing the participation risk of all traders (since a given trade may get executed simply because an exchange insider knows that the trade is to the insider's advantage).

The example above is indicative of a very important fact: it is in the interest of an exchange to self-regulate some types of informed trading. I showed that the negative consequence of informed trading is that it can decrease the participation of traders. That is, there are some types of informed trading that increase the risk of participation and hence

6. Hirschleifer (1971) has provided examples where individuals increase the risk of trade because of the possession of private information that has no social value. He ignores the fact that prices aggregate diverse information and hence diminish the importance of this effect. He ignores the possibility of insuring against the adverse price fluctuations associated with the arrival of information. He further ignores the fact that market participation will fall because of such trade and, hence, that exchanges will have an incentive to regulate the trade to the extent that it is feasible to do so.

will lead to a decrease in the volume of trade that takes place on the floor of the exchange. It has been established that the price of a seat on an exchange is strongly related to the amount of trading volume.⁷ If the exchange seeks to maximize the value of its seats, then it will seek regulations that maximize the volume of trade. As I showed above, it is an extremely delicate matter to determine which types of informed trading should be prohibited. The outright prohibition of all types of informed trading would be equivalent to the closing of the futures market since almost all commercial traders have some private information. The exchange must decide whether the overall effectiveness and thus the volume of trade will fall when some types of trading are prohibited by comparing the extent to which the existence of windfall profit associated with private information is in effect subsidizing other forms of trading activity and has the overall effect of enhancing the informational and hedging role of the futures market.⁸

V. Conclusions

The exchange suffers if it allows the viability of a market to decrease; hence, it has reasonably good incentives to search for regulations that will increase the trading volume on futures markets. We have seen that a very difficult calculation is required before it can be decided that a trading prohibition will enhance the hedging and informational role of a futures market. From the exchange's point of view an "abuse" is some correctable form of risk-enhancing trading that is reducing the benefits of trading on the futures market and hence reducing the volume of trade. It will thus deal with abuses to the extent that it is possible to prevent them without adversely affecting trading volume or the viability of the futures market. The same thing may not be true for the CFTC. I have argued that it is very likely that informed traders earn trading profits on average from uninformed traders. To a large extent these profits help finance the liquidity of the market and enhance the price discovery role of the market. If the CFTC is guided by a notion of "fairness" that declares trading profit based on private information to be "unfair," then regulations to limit "unfairness" (by eliminating informed trades) will adversely affect trading volume and the social benefits from futures trading.

It is important to realize that securities law prohibitions against insider trading are not prohibitions against informed trading. They are not designed to prevent "unfair trades," that is, trades in which one party is at a disadvantage relative to the other party. These laws are

7. For documentation of the strong positive relationship between the value of a seat on an exchange and the volume of trade, see Rystrom (1982).

8. For an analysis of self-regulation on futures markets, see Fischel and Grossman (1984).

designed to prevent corporate officers from violating their fiduciary responsibility to shareholders, for example, by preventing trade by an insider that increases the wealth of the insider at the expense of shareholders. A futures contract is not a "security" issued by a commercial trader. The commercial trader is not under any fiduciary obligation to avoid profiting from his futures trading. (A member of the exchange or clearing corporation staff could have a fiduciary responsibility to avoid trading based on his inside information, but such trading is prevented by exchange regulations.) Hence the rationale provided by securities law for regulating insider trading is absent in the case of futures markets. It is for this reason that I would expect fairness to be a crucial rationale behind CFTC attempts to prevent informed trading.

If fairness is to be the basis for preventing trading based on private information, then any regulations enabling this standard should provide for some kind of cost-benefit analysis of the effect of restricting trade. In particular, if a lack of fairness will drive uninformed traders from the market, then it should be up to the CFTC to show (a) that the exchange did not act in its own self interest by sufficiently regulating informed trading to keep trading volume high or (b) that, for some reason, unfairness does not drive down trading volume and hence the exchange does not have the proper incentives to maintain fairness.

A futures exchange is producing a product: the provision of transactions services via the trading of contracts. To the extent that it is cheap to identify and prevent volume reducing informed trading, an exchange will be producing a good product by so doing. If an exchange fails to take such action, then it is producing a low-quality product. An exchange would seem to have all the incentives for producing good products that is possessed by any other industry. It is thus essential that any legislation that enhances the ability of the CFTC to regulate informed trading should be quite specific as to what is the definition of fairness or of an "abuse." For the reasons given above, it is unlikely that Congress or the CFTC will come up with a better definition of fairness than what is implicitly used by the exchanges at present ("fair trading is trading that is volume enhancing"). Hence, the further regulation of informed trading is as likely to lower the quality of the exchange's products as it is to increase the quality.

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